
Space Weather Forecast

Issued on Tuesday, 27 February 2024 at 13:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Minor/Moderate R1/R2 Radio Blackouts from Moderate X-ray flares remaining likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with X-ray activity confined to common class flares, peaking 27/0742UTC. This flare emanated from the largest and most complex sunspot group on the disc. Changes within this group have become slow and minor. This spot exhibits rather open and apparently stable magnetic field lines at present though has the potential to become more active. Other spots were much simpler in comparison.

There were no Earth-directed Coronal Mass Ejections (CMEs) observed in available coronagraph imagery.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a corotating-interactive-region and a weak connection to a coronal hole fast wind. Solar wind speeds have been generally slightly elevated. The interplanetary magnetic field, rose from weak to moderate, peaking at 26/2359 UTC before gradually falling, ending the period at weak. The north-south component was mostly weak and positive (northward) but with a notable sustained negative (southward) period between 26/2200-27/0500 UTC. The net result of the above solar wind measures was generally Quiet to Unsettled (Kp 1-3) with one G1/Minor Storm interval (Kp 5) at 27/0300-0600 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate-class flares are still likely, with an ongoing slight chance of Strong-class. This risk is assessed as being constant through the four-day period, with the behaviour of the largest and most magnetically complex sunspot region the dominant consideration.

Solar Wind / Geomagnetic Activity: No coronal mass ejections feature in this forecast period. Weak enhancements from the high speed streams of two small coronal holes are possible in the next two days, though their effects are expected to be limited. Geomagnetic activity is expected to be Quiet to Unsettled throughout, with a chance of Active intervals days 1 and 2 (27/28 Feb).

Energetic Particles / Solar Radiation: Solar radiation storms of S1 or above are assessed as a rising slight chance day-on-day, with the main risk factor being any proton-rich flares from the largest group, which is nearing a potent position on the west of the facing side of the Sun - should it flare appropriately.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	60	60	60	60
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	15	15	20	20
Very Active	≥ S3 *	No	2	2	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)